



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/016,848	12/14/2001	Bradly J. Cooke	4250.2.8	7439
35068	7590	05/10/2005	EXAMINER	
UNIVERSITY OF CALIFORNIA LOS ALAMOS NATIONAL LABORATORY P.O. BOX 1663, MS A187 LOS ALAMOS, NM 87545				CONNOLLY, PATRICK J
ART UNIT		PAPER NUMBER		
		2877		

DATE MAILED: 05/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/016,848	COOKE, BRADLY J.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Patrick J. Connolly	2877	

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*  
**Period for Reply**

**A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM  
THE MAILING DATE OF THIS COMMUNICATION.**

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) Responsive to communication(s) filed on 31 March 2005.  
 2a) This action is **FINAL**.                    2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) Claim(s) 1-16,20-61 and 65-90 is/are pending in the application.  
 4a) Of the above claim(s) 20-45 and 65-90 is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 1-16 and 46-61 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on 20 February 2002 is/are: a) accepted or b) objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) Notice of References Cited (PTO-892)  
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)  
 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
     Paper No(s)/Mail Date \_\_\_\_\_.  
 4) Interview Summary (PTO-413)  
     Paper No(s)/Mail Date \_\_\_\_\_.  
 5) Notice of Informal Patent Application (PTO-152)  
 6) Other: \_\_\_\_\_.

**DETAILED ACTION**

***Response to Arguments***

Applicant's arguments filed March 31, 2005 have been fully considered but they are not persuasive.

The Applicant is directed towards Figure 6 and Figure 10, as examined in the analysis below. Figure 6 shows two modulators that impart two different modulations ( $f_1, f_2$ ) to the beam portions. Figure 6 also shows that a hybrid beam is detected before (DET 2,  $f_1-f_2$ ) and after being reflected by the target (DET 1) and that this beam contains difference information between the two modulated beam portions. Figure 10 show the incorporation of the modulation devices into a target identification apparatus including apertures.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 7, 11, 14-16, 46-48, 52, 56 and 59-61 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by U.S. Patent No. 5,715,044 to Hayes.

As to claims 1 and 46, Hayes discloses a laser radar and method of using including (see Figures 6, 9 and 10 below):

Art Unit: 2877

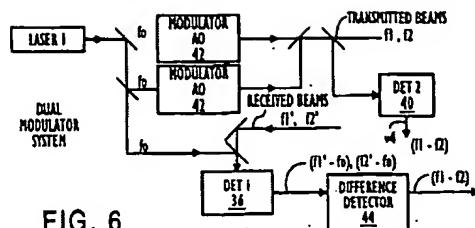


FIG. 6

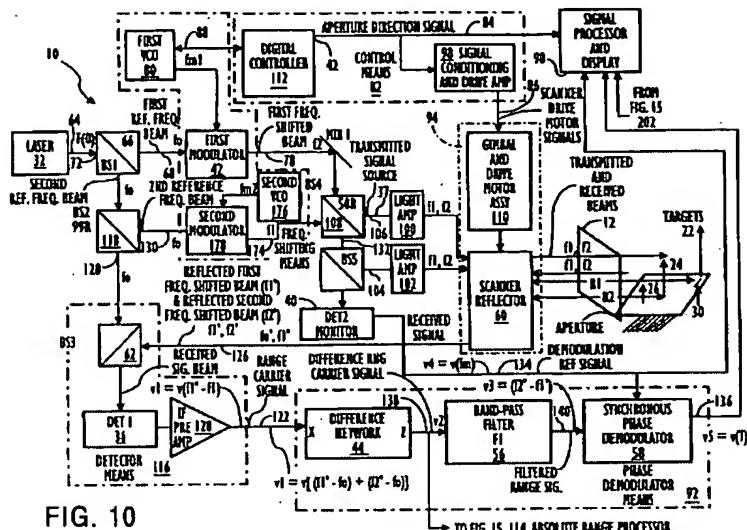


FIG. 10

a first modulating device for modulating a first portion of electromagnetic radiation

(Figure 6, 42, f1);

a second modulating device for modulating a second portion of electromagnetic radiation

(Figure 6, 42, f2);

a beam combiner that combines the modulated beam portions to form a coherent hybrid beam containing difference information between the two modulated beam portions (Figure 6)

an aperture (Figure 10, 12) configured to radiate a reflective target (22) with the modulated first and second portions (r<sub>1</sub>, r<sub>2</sub>);

a receiver configured to determine information about the target by processing said reflected portions (Figure 10, 116, 92).

As to claims 2 and 47, Hayes discloses coloring the targets with visible light that would inherently have a wavelength of less than 1 millimeter (see column 3).

As to claims 3 and 48, Hayes discloses a coherent laser source (32).

As to claims 6 and 51, Hayes discloses two separate modulators (see Figure 6 above).

As to claims 7 and 52, Hayes discloses acousto-optic modulators (see column 11).

As to claims 11 and 56, Hayes discloses frequency modulation (see column 11).

As to claims 14 and 59, Hayes discloses determining the relative velocity between targets and the measuring system (see column 10).

As to claims 15 and 60, Hayes discloses determining the range of targets (see entire document).

As to claims 16 and 61, Hayes discloses generating an image of the target (see columns 13-16).

#### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4, 5, 8-10, 12, 13, 49, 50, 53-55, 57 and 58 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,715,044.

As to claims 4, 5, 49 and 50, Hayes does not teach the use of incoherent or mixed coherent light detection.

It is well known in the art to use light sources of low coherence as compared to the optical path being measured in range or position detection in order to, for example utilize time-delay geometric path measurements. See for example U.S. Patent No. 4,572,949 to Bowers et al.

It would have been obvious to one of ordinary skill in the art at the time of invention to use a low coherent source in order to make range measurements based on the aforementioned time-delay measurements with respect to coherence.

As to claims 8-9 and 53-54, Hayes teaches a laser radar apparatus with both single and double modulators. Hayes teaches that more accurate measurements with respect to multiple targets and relative velocities can be made with two modulators as shown in Figure 6 above.

It would have been obvious to one of ordinary skill in the art at the time of invention that more modulators could be included in the apparatus of Hayes so that more accurate measurements could be made with respect to multiple targets and relative velocities.

As to claims 10, 12, 13, 55, 57 and 58, Hayes teaches only frequency modulation.

It is well known in the art to use polarization, amplitude and phase modulation in distance and range measurements based on desired information about the target being measured, such as time of flight or direction.

It would have been obvious to one of ordinary skill in the art at the time of invention to include as substitution or in addition to the frequency modulators of Hayes, the aforementioned modulators in order to create more specific measurements with respect to the targets of interest.

*Conclusion*

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

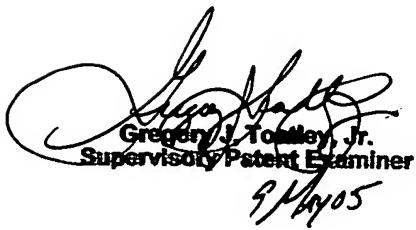
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick J. Connolly whose telephone number is 571.272.2412. The examiner can normally be reached on 9:00 am - 7:00 pm Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley, Jr. can be reached on 571.272.2800 ext. 77. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

pjc PJC  
05.05.2005

  
Gregory J. Toatley, Jr.  
Supervisory Patent Examiner  
9 May 05